THE GENERAL BOARD

United States Forces, European Theater

MACHINE RECORDS IN THE EUROPEAN THEATER OF OPERATIONS

MISSION: Prepare a factual, annotated report with appropriate conclusions and recommendations on the organization and technical and administrative operations of machine records in this theater.

The General Board was established by General Order Number 128, Headquarters, European Theater of Operations, U. S. Army, dated 17 June 1945, as amended by General Order Number 182, dated 7 August 1945, and General Order 312, dated 20 November 1945, Headquarters, United States Forces, European Theater, to prepare a factual analysis of the strategy, tactics, and administration employed by the United States Forces in the European Theater.

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THE GENERAL BOARD

United States Forces, European Theater

REPORT ON

MACHINE RECORDS IN THE EUROPEAN THEATER OF OPERATIONS

Prepared By:

Col. R. B. PATTERSON, O-3468, AGD, Chief, Adjutant General Section
Adjutant General Fifteenth U.S.Army and
formerly AG V Corps.

Capt. H. J. JOHNSON, O-1002951, AGD, Machine Records Officer
Headquarters Bremen Port Command.

Principal Consultants:

Col. C. R. LANDON, O-15592, AGD, Secretary, The General Board
formerly Adjutant General, 12th U.S.Army
Group and SOS, ETO.

Col L. R. GARRISON, O-11580, AGD, Secretary, The General Board
formerly Adjutant General, XIX Corps and
Eighth Air Force Support Command.

Lt. Col. F. H. GAFFORD, O-382619, AGD, Central Machine Records
Unit.

Lt. Col. H. L. COREY, O-291819, AGD, AG Section, USFET.

Maj. C. L. BODINE, O-206474, AGD, Postal Officer, Hq Fifteenth
U.S.Army.

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REPORT ON MACHINE RECORDS IN THE EUROPEAN THEATER OF OPERATIONS

CHAPTER 1

MISSION OF MACHINE RECORDS

SECTION 1

SCOPE OF MISSION

1. Purpose of Machine Records Units. Machine records units were established as an integral part of the Adjutant General's Section of command headquarters to collect personnel data from unit personnel sections and administrative centers, to act as a reservoir of such data, and to furnish timely administrative information, reports, and records to both higher and lower headquarters, as required and requested.

2. The Test of Machine Records. In the very early stages of the war and before United States participation, the War Department became aware of the need of some mechanical method to compile strength and personnel information on the Army. The punched card method was studied and adopted in September 1940. Machine records units were set up in the United States at Service Commands and Army Headquarters to handle records of the Army in its training stage. The European Theater, including initially, the North African Theater, afforded the first opportunity for a concrete extensive test of machine records procedures and their adaptability to combat conditions and operations. Manifestly, previous knowledge did not contemplate problems that would confront these operations; and, preliminary planning did not foresee the effects of the huge military buildup, the wide-spread and fast moving operations, and the peculiar difficulties incident to the trans-channel invasion. The following sections of this report will deal with the organization and operations of machine records units in the European Theater of Operations, the lessons learned, and recommendations based upon difficulties encountered during operations.

SECTION 2

ORGANIZATION OF THE MACHINE RECORDS SYSTEM

3. At Corps Level. The smallest size unit employed in the European Theater was known as the Y Type, Mobile Unit. It originally consisted of three officers and 39 enlisted men. This was changed to increase the number of enlisted men to 45.[1] Its operating equipment was composed of two machine vans, one

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1. War Department, Table of Organization and Equipment No. 12-317, dated 3 October 1944.

supply van, and two generators. This type unit was assigned to a corps headquarters to service the divisions and corps' attached troops which were under the control of that headquarters.

4. At Army Level. The largest size mobile unit is that known as the Z Type, Mobile Unit, consisting of four officers and 56 enlisted men at first and later increased to 64 enlisted men.[1] The operating equipment used was three machine vans, one administration van, one supply van, and three generators. Being assigned to an army headquarters this type unit serviced all army attached troops, was a consolidation agency for the compilation of army required reports, and was the control over machine records units assigned to the corps, under army's command.

5. At Army Group Level. In Twelfth Army Group, a Z Type, Mobile Unit, was used for the purpose of servicing troops assigned or attached to Army Group Headquarters, to compile statistics, prepare station lists, and to perform special services for that headquarters. In addition it acted as a "clearing house" for all machine records troop movements and serviced newly arrived divisions prior to their being placed under the control of an army or corps. There being only one U. S. Army in Sixth Army Group, all MRU activities were conducted by it, no unit being held at Army Group Headquarters.

6. Army Service Forces. To service troops engaged in the services of supply, rear echelon headquarters, general hospital installations, and replacement depots, both Y and Z Type, Mobile Units were employed.

7. Army Air Forces. Army Air Forces personnel were serviced by one fixed type and four mobile units. In addition to keeping personnel records, it was their responsibility also to maintain records on AAF equipment.

8. European Theater Headquarters. The top-control machine records unit for the theater was known as Central Machine Records Unit. It was a non-T/O fixed unit with equipment set up at theater headquarters. This unit was charged with the following responsibilities:

a. Coordination of subsidiary machine records units' activities.

b. Maintenance of supplies: punch cards, continuous paper forms, spare parts, and equipment.

c. Consolidation of cards and reports of subsidiary machine records units for theater and War Department requirements.

d. Over-all planning of machine records activities for the theater.

e. Consolidation from the theater standpoint of all theater wide strength reports, both for local use and for submission to the War Department.

f. Development of theater personnel accounting procedures as technical support to the various Army Regulations, War Department, and theater directives on personnel accounting.

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1. War Department, Table of Organization and Equipment No. 12-317, dated 3 October 1944.

g. Control assignment and adjustment of mobile units to subsidiary commands.

h. Coordination of machine records activities with other parts of the theater personnel system, such as: the Casualty, Personnel, and Classification Divisions of the theater Adjutant General's Office, Provost Marshal, hospitals, and sections of the staff. Machine prepared reports and, in some cases, punched cards were furnished to various of the above named agencies.

i. Coordination of machine records activities with other theaters of operation.

j. Maintenance of theater locator file.

k. Preparation of station lists to show location of units.

l. Unit serial number and code shipment file distributed to theater agencies for use in supply and movements.

m. Casualty reports and their dispatch in punched card form to AG Casualty Division and to the War Department.

n. Machine prepared rosters for chiefs of services in the theater and for the War Department.

o. Classification reports.

p. Personnel surveys of various types.

q. Special strength studies for theater agencies.

The above itemized responsibilities set forth the functions of the machine records system as a whole. Information that was compiled by Central Machine Records Unit had its origin in basic data submitted by the field units.

CHAPTER 2

MACHINE RECORDS IN OPERATION - PRE-INVASION

SECTION 1

SETTING UP IN ENGLAND

9. Arrival of First Units. In May 1942 the 91st Machine Records Unit, arriving with the first troops sent to England, assumed the servicing of all personnel in the newly founded European Theater of Operations. As the strength of the theater increased past the half-million mark, other machine records units were sent over from the United States and functioned as subsidiary units of the 91st.

10. Establishment of Central Machine Records Unit. By September 1943 the increasing strength of the theater and the number of servicing machine records units reached the point where a controlling and consolidating agency was necessary in order to meet the growing demands of the War Department and theater headquarters for combined reports and statistics; and further, to set up and maintain theater-wide card files on all troops. The Central Machine Records Unit, as the name implies, was thus established as the chief machine records controlling and consolidating agency for the theater.

11. Allocation of New Machine Records Units. As new units arrived in England they were staged at Cheltenham. Here they were processed and oriented as to machine records procedures in effect for the European Theater. These procedures were, in some respects, quite different from those under which these units had operated in the United States. As these newly arrived units obtained their equipment, they were assigned to corps and army headquarters which were coming from the States or being formed in England. Troops, as they arrived, were assigned to these headquarters and were serviced by the machine records units at these headquarters during their pre-invasion training and preparation period.

SECTION 2

FUNCTIONS IN ENGLAND

12. Unit Operations. On D-Day there were 32 machine records units and Central Machine Records Unit operating in England.[2] As mentioned in Section 1 of this chapter, these units were operating with headquarters preparing for the invasion and subsequent operations on the Continent. The normal functions of machine records were being accomplished and, in addition, special services were being rendered to each local headquarters as the need for special reports arose. Basically the requirements of headquarters centered around the need for the following information:

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2. Survey of Machine Records Operations.

a. Statistics for preparation of strength returns, rosters, personnel studies, and classification reports and analysis.

b. Information concerning officers in the command.

c. Data concerning organizations and units of the command, as to their location, assignment or attachment, and related facts.

Battle casualty reporting was then in its infancy stage. The Army Air Force being the most active combat part of the army was reporting casualties on personnel which had failed to return from missions. The manual procedure originated in 1942 was changed to machine records reporting, 1 March 1944. Other casualties were reported as a result of enemy bombing and as having been incurred during invasion exercises.

13. Central Machine Records Unit Operations. During the pre-invasion stage this unit was busily engaged in shaping the whole machine records program in preparation for what was to come. Procedures were revised and new procedures instituted as demands for more and more information came from theater headquarters and the War Department. Consolidated reports were compiled and transmitted to requiring headquarters, both in England and the United States. A central locator file for all personnel in the theater was originated and maintained. A similar file was set up for the Base Post Office at Sutton Coldfield to facilitate the routing of mail received showing no unit designation or APO number. During the latter part of April 1944, a new agency was founded and became known as Build-Up Control Operations (BUCO). The purpose of this agency was to control the cross-Channel movement of troops in order to provide a balanced force on the Continent.[3] A complete set of organization punched cards was supplied this agency and from these cards tabulations were prepared, showing units departed and those remaining in the U.K.

SECTION 3

PREPARING FOR THE INVASION

14. Alerting of Units. As D-Day approached and passed, machine records units were alerted with their respective headquarters. Units prepared their equipment for the trans-Channel movement. This entailed water-proofing all automotive equipment for landing through the water to the beach, storing of records, and packing of organizational equipment and supplies. The first mobile unit to make the Channel crossing was the 26th MRU which landed in Normandy with Headquarters V Corps (Rear Echelon) on D plus 18.

15. Embarking. Embarking was accomplished by convoying the machine records units down to the staging areas in Southern England. Here they were processed. The heavy equipment, in some instances, was loaded onto LCTs or LSTs and the personnel crossed on troop ships, rejoining their unit on the other side. Other units loaded both personnel and equipment on the same boat. All units that made the crossing did so without any loss of equipment or personnel and with no serious damage to the valuable equipment intrusted to their care.

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3. The General Board report "Control of the Build-up of Troops in a Cross-Channel Amphibious Operation as Illustrated in Operation 'Overlord'." This report gives operations of this agency in detail.

CHAPTER 3

MACHINE RECORDS IN OPERATION - ON THE CONTINENT

SECTION 1

THE INVASION

16. Arrival of First Units. The first unit, as mentioned before, was the 26th Machine Records Unit, followed by the 32nd Machine Records Unit, assigned to Headquarters First U.S.Army. It became the responsibility of the MRU under First U. S. Army to arrange for the collection and flow of morning reports and casualty reports on the Continent to the appropriate rear echelons remaining in the United Kingdom.[4]

17. Arrival of Subsequent Units. During the first few months of the invasion, more machine records units arrived on the Continent. They drove up from the beach and took their positions with the rear echelons of their respective headquarters. One of the major problems at this stage of operations was the servicing of Army Service Forces' organizations operating in the newly created Advance Section, Communication Zone on the Continent. It was determined that all ASF organizations assigned or attached to the Advance Section, Communication Zone, would be serviced by the assignment of three machine records units. These units under the operational control of one officer were so assigned and phased for approximately D plus 26. They were staged, shipped, and established on the Continent together. The servicing of approximately 225,000 ASF troops was evenly distributed.[4] ASF and miscellaneous organizations remaining in the United Kingdom were serviced by two units. In this manner it was possible to provide Channel service for all commands during the transition stage.

SECTION 2

DEPLOYMENT OF UNITS

18. ARMY GROUND FORCES. From St.Lo the battle line began to fan out and spread wider and wider. The corps machine records units moving along with their headquarters, often close behing the fighting troops, were also spreading out and putting distance between themselves and the rear echelons of armies and the Beachhead. The rapid rate of advance required these units to change their location on the average of two and three times a week. With the establishment of Army zones and the setting up of Army rear headquarters, usually in the center rear of these zones, operations became a bit more stabilized. The army machine records unit was the controlling factor for all the machine records units in its zone. The Army Group machine records unit being in the rear of the armies served as a "go between" for the armies and facilitated the transfer of troops between the armies.

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4. Survey of Machine Records Operations.

19. Army Air Forces. On 15 September 1944, the Headquarters Ninth Air Force moved to Chantilly, France.[5] The MRUs assigned to this headquarters moved there also and those assigned to the Eight Air Force remained in England.

20. Army Service Forces. By the time that the advance had driven to Paris, which was during the last days of August 1944, Communications Zone was well established on the Continent. The Headquarters Communications Zone became located in Paris shortly after its liberation. With the fighting front approaching Germany the Communications Zone grew larger and larger. During the latter part of October 1944, Headquarters Advance Section, Communications Zone was set up at Namur, Belgium. The three machine records units that had come across the channel on D plus 26 operated under this headquarters. Other units were assigned to the rear headquarters of Communications Zone for the servicing of troops under that headquarters, of general hospitals, and of beachhead troops.

21. Theater. When Communications Zone headquarters moved from Valognes to Paris, a suitable site in Paris was selected for Central Machine Records Unit. To further facilitate operations, arrangements were made for the AG Casualty Division, whose basic reporting information was secured through machine records means, to be located in the same building. On 20 September 1944, the Central Machine Records Unit left London by special motor convoy and arrived in Paris on 26 September 1944. A separate air party came in advance to complete arrangements for the arrival of the main body. All technical equipment was unpacked and operational by the first week in October 1944. Thus it was possible to meet month-end report deadlines to the War Department with only a seven day delay due to this major move. With the exception of a few units left in England to service troops operating there and the Army Air Force, all other units were on the Continent and in full operation. Information was flowing from the corps machine records units, to the army units, to Central Machine Records Unit; from ASF units to Central Machine Records Unit; from AAF units to Central Machine Records Unit; and, from the units in England through the 91st MRU, now in London, via air to Central Machine Records Unit. The system was now very closely knit together and perfect coordination was prevalent in the performance of all machine records functions.[6]

SECTION 3

FUNCTIONS OF MACHINE RECORDS UNITS

22. Morning Report Processing. The morning report is the basic document from which machine records obtains its information. It is this instrument which notifies an MRU of any change pertaining to the organization serviced and to any changes in personnel of the organization. Morning reports originating at company or similar unit level are sent to a unit personnel section. Here they are grouped and forwarded to the servicing machine records unit. The machine records unit maintains the following controls on morning reports.[7]

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5. Supplied by Air Section, Hq Fifteenth U.S.Army.
6. Facts stated in Par 21 derived from Survey of Machine Records Operations.
7. Requirements as set forth in Machine Records Technical Manual TM 12-305 (Amended).

a. Prompt receipt: If an exceptional lag is noticed in the receipt of morning reports from any organization serviced, it is investigated and an effort made to speed up delivery. If any missing reports are noted, the organization is contacted and missing report or reports, either the original or true copies thereof, are forwarded immediately.

b. Strength: A control is maintained to check each organization's morning report strength section from day to day. Any change, plus or minus, will be substantiated by an appropriate entry in the "Remarks" section of the report. Should the organization be in error, it is immediately contacted and requested to make the correction in a subsequent report.

c. Station Change: Each machine records unit maintains a record of movement orders of organizations serviced. Morning reports of organizations which have changed station are carefully audited to insure accurate reporting of new location name and map coordinates.

After the initial checks are made upon the receipt of morning reports, they are coded for changes entered thereon. These changes are key-punched and verified by check against the morning report. The change cards thus produced are then used for machine processing of the status file. In this file is a card for each individual under the command. Morning reports, after processing, are filed in chronological order by organization and kept for two consecutive months. At the start of the third month, the reports for the first month are removed from the file, packaged, and forwarded to The Adjutant General in the War Department.

23. Strength Accounting. The daily morning report changes that effected strength were summarized each day and incorporated into the Daily Strength Cards. From these cards a tabulation of strength for all organizations serviced was prepared daily. Twice monthly strength summary cards are prepared and forwarded to Central Machine Records Unit for theater consolidation purposes. An example of the use to which these strength cards are put is the preparation of the SARO Reports. In June 1944, the Strength Accounting and Reporting Office (SARO) of the War Department General Staff laid down requirements for a new series of uniform monthly reports for all overseas theaters. The main purpose of the SARO Reports was to provide authorized and actual strength of individual units and types of units by type of personnel; and in preparation of these world-wide strength reports by theater, to utilize the same terminology and definition as the War Department Troop Basis (planning document governing mobilization of army strength) so strength data, prepared identically, could be studied readily. The War Department uses the SARO Reports in the audit and reconciliation of the "Troop List for Operations and Supply", and in the audit of accomplished strength by race, by type of personnel, by grade, and by arm or service. The top strength for the theater, serviced by machine records, reached approximately 3,090,000.[8]

24. Battle Casualty Accounting. The casualty procedure as outlined for the European Theater had a two-fold purpose, namely:[9]

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8. Figure supplied by Central MRU.

9. TM 12-305 (Amended)

a. To furnish the War Department with complete data on casualties to be used by The Adjutant General in notifying next of kin and to supply statistical information to War Department and other planning agencies.

b. To provide the various agencies of Headquarters European Theater of Operations and local headquarters with casualty information necessary for proper planning, administration, and operations.

Accounting for individual casualties within the theater and to the War Department was accomplished primarily through the machine records system by the use of punch card forms. During the first months of the invasion the units were hard pressed to handle the tremendous volume of work necessary to process the large number of initial casualty reports. In the latter part of 1944 the War Department published a new Table of Organization for machine records units, giving each unit additional personnel but no additional operating equipment. Even with the increased personnel it still took a great effort to keep casualty reporting on a current basis. The First U. S. Army was the only Army to have battle casualties processed through its corps' machine records units. The other Armies used the system of having the corps' headquarters act as a collection agency, to receive the reports from their organizations, and then to transmit them to the army headquarters. By-passing the corps' machine records units in this manner saved both time and work at the corps' MRU. The AG Casualty Section at army headquarters checked the battle casualty reports and sent them to their machine records unit. Here they were punched and verified to the casualty report. A deck of cards punched was sent back to the corps units for further checking to the status card file and to the morning report entry. It took an MRU, on the average, twelve hours to process 1,000 individual casualties. Four decks of cards and two machine-prepared battle casualty reports were forwarded to AG Casualty Division, Hq. ETOUSA, daily. This plan as used by the armies was also used by the Army Air Forces and the headquarters of base sections. It is interesting to note that through VE-Day a total of more than 1,000,000 casualty reports were processed, averaging 3,300 a day. During peak casualty periods, such as D-Day to D plus five, the American break-through at St Lo, and the Battle of the Bulge, initial casualty reports processed daily increased to 6,000 to 8,000. Time lag for reporting a casualty from date of casualty to date of report to the War Department went from 29 days on D plus 60, to 8 days on D plus 150, to less than 7 days on D plus 240. The volume of casualty reports processed and the accuracy and speed required for tabulations prepared could not have been done by other than punch card methods.[10]

25. Non-Battle Casualty Accounting. The machine records system was used to maintain statistics on all attritional losses to the theater, plus progress reports accounting for movement of non-battle casualties through the hospital chain. The total number of cases processed approximated 500,000, all of them separate and apart from battle casualties.[10] Receipt of disposition reports from hospitals of both battle and non-battle casualties operated as a double check to insure that the two types of casualties were not confused.

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10. Facts obtained from Survey of Machine Records Operations and Third U.S.Army Casualty Procedure.

26. Accounting for Hospitalized Personnel. During constant combat operations, the load of patients being evacuated over long lines of communication from the combat zone to Communication Zone hospitals located in rear areas on the Continent and in England, presented a major problem. A locator card system was devised whereby a card was made for each casualty as reported and sent to the Central Locator File in Paris. From hospital Admission and Disposition Sheets locator cards were key-punched and these also transmitted to the Central Locator File. These cards were then filed into the main file and the oldest dated card dropped out. The latest report on an individual was the only card to remain in the file giving his latest reported location. Basically, the plan had merit. However, due to the rapid movement of casualties through the hospital chain, delays in communications, and faulty reporting, the location of patients by this means frequently could not be accomplished.

27. Roster Preparation. Once each month the status file in each machine records unit was listed to prepare personnel rosters on both enlisted men and officers. These rosters were sent out to organizations serviced for them to check against their personnel records, in order to verify the card records maintained at the machine records units. This procedure provided an auditing expedient and corrections were made upon the return of the roster. Extra copies of these rosters were provided to each organization for their local use. Copies of officers' personnel rosters were forwarded to The Adjutant General. A copy of the officers' rosters for organizations in certain arms or services was forwarded to the chief of each respective arm or service in Washington, D.C. From time to time special rosters were prepared as an aid to organizations serviced and as requested by staff sections of local headquarters.

28. Locator Service. From morning report entries of gains and losses, locator cards were produced and forwarded to: The Adjutant General, Central Machine Records Unit, Base Post Office, local Army Post Office, and for entries dealing with AWOL cases to the Theater Provost Marshal. Central Machine Records Unit maintained a central locator file of all army personnel in the theater. This file has grown to its present capacity of approximately 5,000,000 cards.[11] It contains a card for each individual that entered the theater, showing his present location or the date that he left the theater.

29. Transfer of Divisions and Separate Organizations. The flexibility of the machine records system was such that as Troop Assignments were received transferring troops from one command to another, the punched cards and allied records for those troops were also transferred from one MRU to another. The cards being on a standard form were immediately placed in the files of the new MRU and processing continued. It was the responsibility of the losing unit to notify the organization transferred of the change of servicing and to transmit the records to the new MRU. Records transferred consisted of: Status files, casualty files, daily strength cards, master organization cards, morning reports for current month, roster and correspondence files.

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11. Figure quoted by Central MRU.

30. Special Work. Machine records units performed many special services for their local headquarters when they were able to do so without impairing the accomplishment of their principal duties as required by theater headquarters. At Twelfth Army Group Headquarters a file was prepared for the Counter Intelligence Branch of the G-2 Section to record all suspected personnel and war criminals. Also at this headquarters a file was set up to record Field Forces awards and decorations. Station lists were prepared by machine records units to show the location of all organizations in the command. Master station lists were made up by the army group MRU to show the location of all units of the Field Forces. Central MRU published a station list which showed the location of organizations in the theater. Every three months the War Department conducted a Personnel Survey of the Army. A questionaire was made up and sent out through machine records units to personnel representing two percent of the strength of the Army. These questionaires were answered from individuals' Forms 20s or 66-1s and by personal interview. The completed questionaires were returned to the machine records units and cards punched therefrom. Cards completed were sent to Central Machine Records Unit to be consolidated for the theater and transmitted to the War Department.

31. Comparison to Manual Methods. It would be exceedingly difficult and almost impossible to measure in man hours the work that was performed by the equipment used in machine records. However, to illustrate the advantage and speed of machine methods over possible manual methods, roster preparation is a good example. The cards in the status file are available at all times for listing in any desired roster form. They are placed in an Alphabetic Tabulator and listed at the rate of 80 complete lines per minute. The machine will list a company of 200 men in approximately three minutes. On each line would be shown the individual's serial number, name, grade, arm or service, and Military Occupation Specification number (MOS). Assuming that each line would require 34 typing strokes and the whole roster 6,800 strokes, an average typist, typing 45 words per minute would need more than 30 minutes to prepare this same roster. Using this illustration as a basis, one can imagine the stupendous task it would be to prepare rosters for the troops under a corps alone. The work would have to be decentralized and many clerks added to unit headquarters. The time element would be prohibitive as it would take typists days to do what the machines could accomplish in the matter of hours. Another factor to be considered, would be the grouping of the information to be shown on any roster. Cards can be sorted mechanically to any desired sequence of information punched. Thus the same cards can be used to prepare rosters in alphabetical, serial, grade, or MOS sequence. A typist working from Form 20s or similar records, would have to re-sort them by hand each time before typing a new form of roster. The above proves only one phase of machine records operations. Others such as strength accounting, casualty accounting, etc., could not have been done by hand methods and provided the information needed by higher headquarters in the time desired.

SECTION 4

RELATIONSHIP OF UNITS

32. Cooperation. When machine records units began to fan out from the St. Lo area along the corps and armies which they serviced, communications became exceedingly difficult. This was true both from the individual machine records unit down to the troops they serviced and from the unit back to the central coordination point. In spite of these difficulties, casualty and strength reporting were continued on almost a normal basis. This was largely due to the ingenuity on the part of the individual unit commanders and the fact that there was in this program a "family spirit" whereby the members of each unit knew most of the members of each other unit personally, working out their individual problems on a mutual basis. A special courier from one unit would check with neighboring units before departing for the coordination point. Messages were often relayed through as many as five machine records units before reaching their destination.[12] As major components were switched from corps to corps, or army to army, the servicing by units was switched as the load could be best handled by the various units. This personal relationship and cooperation between field units, and the spirit of mutual assistance was a definite contribution to the smooth functioning of the entire program.

33. Transfer of Servicing. Along the lines of cooperation and mutual understanding amongst field units an unwritten law was made. When a division or large group of separate organizations were to pass from the servicing of one unit to another, it became the lot of the losing unit to send a special officer courier with the records to the new unit. Oftentimes this called for a trip of several hundred miles and sometimes under weather conditions which were anything but pleasant. However, unpleasant as the task was, it facilitated the transfer of records with the least possible delay and loss of servicing time.

34. Use of Equipment. Until October 1944, when the new T/O-E for machine records units was published, units were short two tractors each for moving their ten-ton vans. It was the original contention that units required to move with their headquarters would use the shuttle system, leaving two vans behind and sending back for them upon reaching their new destination. This would have resulted in too much lost operating time. Again cooperation came to the rescue, and units borrowed tractors and drivers from each other to accomplish the moves. Sometimes when one unit had an overload of work to do, it would borrow a machine van from another unit for a short time. At other times cards would be transported to another unit to be worked upon by that unit until the job was finished. Then when generators began to give trouble, Z Type units with three generators, would operate on two in order that Y Type units, with only two generators, could borrow one until their generator was repaired.

35. Loaning and Transfer of Personnel. There were times when units were in dire need of extra help to accomplish special tasks. The call would go out and units would send what men they could spare

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12. Survey of Machine Records Operations.

for a short period to help out the unit in distress. If another unit was experiencing an undue amount of machine trouble, repairmen from other units would be sent to help out. Arrangements were made to transfer personnel to balance units that were deficient in certain types of trained men, such as key punch operators, machine operators, and coders.

36. Semi-Monthly Meetings. Twice each month strength summary cards had to be carried back to Central Machine Records Unit. Corps units would bring their cards to their army unit and a representative would take them to Paris. Towards the end of the war this developed into a very long trip. Representatives from all the armies, groups, ASF, and AAF units would attend a meeting at Central Machine Records Unit. At this meeting problems, new procedures, and new policies would be discussed in great detail. When these representatives arrived back at their respective headquarters, they would contact the units that they had represented at the meeting and inform them of what they had learned.

SECTION 5

OPERATIONAL PROBLEMS

37. Communications. The success of the machine records program during the rapid changes involved in combat operations depends to a considerable extent on adequate communications. As the corps machine records units progressed farther and farther out in front of their army units, it became increasingly more difficult to maintain good contact. Often telephone conversation was impossible and radio was used with little or no improvement, due to static. Couriers would have to be dispatched from one MRU to another for the purpose of delivering information. Message Center could not be depended upon for fast delivery service, inasmuch as packages had to go through several Message Centers before arriving at their destination.[13]

38. Supply. In order to supply the MRUs with machine records cards and paper forms, Central Machine Records Unit undertook the maintenance of large warehouses in Paris. The great distance back to Paris presented a problem to individual units to obtain needed supplies. Requisitions were pooled for army units and trucks sent back to Paris to return with stock required. Individual units then went to army for their portion. There were occasions when a unit's stock of certain forms were depleted and it was necessary to borrow from a neighboring unit. Repayment of this borrowed stock was made upon the receipt of requisitioned stock from Paris.

39. Mess and Quarters. The machine records unit is self-sustaining in every way except providing for the feeding of its personnel. For this it must depend upon the headquarters to which it is assigned. Quite often the unit would be set up some distance from the headquarters mess, necessitating trucking the men there and back. Then the machine records unit operating on a 24 hour basis required a midnight meal for its night shift. Third U. S. Army provided a separate mess for its MRU and AG Casualty Division.[14] When the

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13. Personal experience of Capt. Johnson, CO 49th MRU(M)

14. Third U. S. Army Casualty Procedure.

units entered Germany, a unit officer would go ahead to a new location and obtain the necessary quarters for the unit. It was found to be to the unit's advantage to do this rather than depend upon the headquarters to perform this service.

40. Unit Moves. Corps units had a rough time of it due to the rapid rate of advance of the combat troops. They were changing their location once a week and sometimes as often as three times a week. Each time one of these moves was ordered it meant closing down operations, packing equipment, and personal belongings, pulling to a new location, unpacking, and starting operations again. Night shift men often went without sleep for 24 hours or more. These moves disrupted operations and created a backlog of work which had to be taken care of by increased effort. Seventh U. S. Army solved the problem, to some extent, by grouping its corps units back at army headquarters and having special courier service down to corps' and division headquarters.[15] Thus they kept their moves to a minimum.

41. Generator Trouble. Corps units are provided with only two generators. Each of these generators operate one-half of the operating time apiece in order to produce electricity for the full period of operation. When one of these generators broke down, it meant that the other would have to carry the full load until the broken one was repaired or replaced by borrowing from the army unit. Sometimes both generators were giving trouble, and it was very uncertain as to whether the unit would be able to continue to operate. Army Ordnance was most helpful and cooperative during combat in the maintenance of this equipment.[16]

42. Obtaining Qualified Personnel. When an operator was lost by a unit, it was difficult to obtain a replacement. A requisition would be submitted and it would go from one replacement depot to another in search of the man needed. This required considerable time. There seemed to be a shortage of machine operators at all times. Frequently, it was necessary to use a general clerk and train him on-the-job in order to fill out the T/O.

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15. Conversation with officer who had charge of Seventh U.S.Army MRUs.
16. Concensus of opinion of MRU commanders.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

SECTION 1

CONCLUSIONS

43. The machine records program, as a whole, accomplished its mission to the general satisfaction of local headquarters, theater headquarters, and the War Department. It is impossible to believe that the tremendous volume of work entailed in the compiling of personnel statistics and accounting for casualties could have been performed by any other than punch card methods. Some of the lessons learned during combat operations can be briefly summarized as follows:

a. There was a pressing need for adequate telephone, teleprinter, and courier service.

b. Central control of theater machine records policies, technical procedures, and assignment of units is necessary.

c. There was extra work created in the transfer of servicing between corps under the same army.

d. There was much lost time due to frequent moves of units.

e. Coordination and importation of information between units was essential.

f. Relaying of messages between units was a necessity.

g. Personal acquaintance existing and fostered between officers connected with machine records aided coordination, cooperation, and mutual assistance.

h. Regular periodical liaison must be maintained within the theater to keep unit commanders posted on future plans, new problems, and developments.

i. Anticipation of sudden demands, and provision for expansion of servicing capacities was required.

j. A unit servicing an army group was best employed for purposes of field coordination, contact with field units, servicing of group special troops, servicing of new organizations which had no designated servicing machine records unit, and the preparation of special studies.

k. Very few staff and administration officers at first fully understood the possibilities and limitations of these machine records facilities.

l. Requests for special reports had to be studied carefully to determine their value, the possibility of preparing them without interfering with primary functions, and the prevention of over-zealous officers from requesting needless and lengthy reports.

m. Replacement of lost technical personnel was difficult to obtain.

SECTION 2

RECOMMENDATIONS

44. Based upon experience gained under the test of combat conditions, the following recommendations for the improvement of the machine records program are submitted:

a. Machine records functions now performed should be recognized, enumerated, and standardized by the War Department. This would include the promulgation of guiding instructions for all theaters covering casualty reporting, strength accounting, statistics on awards and decorations, locator service, accounting of hospitalized personnel, unit serial numbering, roster preparation, and other functions incident to the operation of the army personnel system.

b. The adjutant general publication depots should procure, stock and distribute all machine records paper supplies.

c. Administration and staff officers should be instructed as to machine records unit functions, services available, and their limitations.

d. Communication through some express dispatch service is necessary between field units and Central Machine Records Unit for the issuance of instructions and the delivery of reports back to the theater headquarters.

e. A definite liaison program should be instituted with officers assigned the duty of visiting field units to study their problems and take corrective action.

f. Central control of theater policies, publication of uniform technical procedures, assignment of units and related matters should be maintained at the theater Adjutant General's Office, but operational control of units should be delegated to subordinate major commands.

g. Units at major commands should be used for the processing of battle casualty reports and should be provided with additional personnel and equipment to perform this function.

h. All Y Type Mobile Units, should be equipped with three generators.

i. Qualified technical personnel should be maintained in a separate pool to fill requisitions for replacements.

j. A study should be made of the practicability of grouping machine records units under the same army at army headquarters, or at some central point, depending upon the tactical situation. This would permit the equalizing of the servicing loads and would eliminate the transfer of troops records between Machine Records Units within the same army.

k. Machine records units should be more closely associated with their local headquarters and its problems. Inasmuch as these units were originally established as labor saving devices, they should be employed as such at their local commands. This will require the integration of theater and War Department requirements with the field units, and will result in information contained in punched cards being available for local use at the place most needed.

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Machine Records Technical Manual, TM 12-305 (Amended)

Survey of Machine Records' Operations - Prepared by Central Machine Records Unit

Third U. S. Army Battle Casualty Procedure.

APPENDIX I

COMMENT BY CHIEF OF SECTION

1. The foregoing report on "Machine Records in the European Theater of Operations" was prepared in the Adjutant General Section, The General Board, United States Forces, European Theater. The research was made at the Central Machine Records Unit, Paris, France; contact was made with such experienced Adjutants General of armies and corps and machine record unit officers who had had combat experience that were still in the European theater. Due to the early redeployment of the personnel of certain units, both to the Pacific theater and to the Zone of the Interior, the experience and knowledge of a great number of officers that would have been most desirable was unable to be utilized. However, due to the system of semi-monthly conferences held at Paris during the combat period of machine record units in the theater of operations, as described in paragraph 36 of this report, the experiences and problems that were confronted by commanding officers of machine record units became common knowledge.

2. This study was directed by Captain H. J. JOHNSON, AGD, the Commanding Officer of the 49th Machine Records Unit (Mobile), who was placed on temporary duty with The General Board. Previous to this duty, Captain Johnson had served with the 37th Machine Records Unit in Headquarters, Twelfth Army Group. As Commanding Officer of the 49th Machine Records Unit, he served with the XVIII Corps (Airborne) and the XVI Corps before his assignment to the Bremen Port Command.

3. The advice and assistance of Colonel C. R. LANDON, AGD, formerly the Adjutant General of the Twelfth Army Group and prior to that time the Adjutant General, Services of Supply, European Theater of Operations, has been invaluable. It was during the period that Colonel Landon held the latter position that the Central Machine Records Unit was established in Cheltenham, England, and the initial policies formulated. The Officers mentioned as principal consultants contributed to this study and concurred in the conclusions and recommendations.

/s/ R. B. Patterson
/t/ R. B. PATTERSON
Colonel, A.G.D.,
Chief, Adjutant General Section.